

CLAIMS

1. An optical disk apparatus comprising: a semiconductor laser which emits a laser beam onto an optical disk; a semiconductor laser driver which drives said semiconductor laser with a current, with a high-frequency current being superimposed thereon, and measures the frequency of the high-frequency current; and a main controller which controls the frequency of the high-frequency current produced by said semiconductor laser driver by using the frequency measured by said semiconductor laser driver.

2. An optical disk apparatus according to claim 1, wherein said laser driver includes a semiconductor laser drive circuit which feeds a d.c. current to said semiconductor laser; a high frequency superimposing oscillator which produces a high-frequency current to be superimposed on the output current of said semiconductor laser drive circuit; and a frequency measuring circuit which measures the frequency of the high-frequency current produced by said high frequency superimposing oscillator and outputs the measured frequency to said main controller.

3. An optical disk apparatus according to claim 2, wherein said frequency measuring circuit includes a binary digitizing circuit which converts the high-frequency current into a digital signal; a frequency demultiplying circuit which implements the frequency demultiplication for the digital signal to produce

a high frequency superimposition monitor signal; and a frequency counter which counts the frequency of the high-frequency current based on a reference clock signal supplied from the outside of said laser driver and the high frequency superimposition monitor signal.

4. An optical disk apparatus according to claim 2 further including a register which holds the value of frequency measured by said frequency measuring circuit.

5. An optical disk apparatus according to claim 2 further including a demodulation device which implements the error correction for reproduced data and evaluates the error rate, said main controller determining the superimposed frequency at which the error rate is minimal by using the frequency measured by said frequency measuring circuit and the error rate evaluated by said demodulation device and controlling said high frequency superimposing oscillator to produce a high-frequency current of the determined frequency.

6. An optical disk apparatus according to claim 2 further including a data strobe device which detects the jitter emerging at the conversion of a reproduced signal into a digital signal, said main controller determining the superimposed frequency at which the jitter is minimal by using the frequency measured by said frequency measuring circuit and the jitter evaluated by said data strobe device and controlling said high frequency superimposing oscillator to produce a high-frequency current

of the determined frequency.

7. An optical disk apparatus for reproducing data recorded on an optical disk, said apparatus having a semiconductor laser which emits a laser beam onto said optical disk, an optical head on which said semiconductor laser is fitted, a laser driver which controls the output of said semiconductor laser, and a main controller which controls said optical head and said laser driver,

wherein said laser driver includes a semiconductor laser drive circuit which feeds a d.c. current to said semiconductor laser, a high frequency superimposing oscillator which produces a high-frequency current to be superimposed on the output current of said semiconductor laser drive circuit, and a frequency measuring circuit which measures the frequency of the high-frequency current produced by said high frequency superimposing oscillator and indicates the measured frequency to said main controller.

8. A laser driver which controls a semiconductor laser which emits a laser beam onto an optical disk, said laser driver including a semiconductor laser drive circuit which feeds a d.c. current to said semiconductor laser; a high frequency superimposing oscillator which superimposes a high-frequency current on the output current of said semiconductor laser drive circuit; and a frequency measuring circuit which measures the frequency of the high-frequency current produced by said high frequency superimposing oscillator and outputs the measured

frequency to the outside.

9. A laser driver according to claim 8, wherein said frequency measuring circuit includes a binary digitizing circuit which converts the high-frequency current into a digital signal; and
5 a frequency demultiplying circuit which implements the frequency demultiplication for the digital signal to produce a high frequency superimposition monitor signal.

10. A laser driver according to claim 8, wherein said frequency measuring circuit includes a frequency counter which counts the frequency of the high-frequency current based on a reference clock signal supplied from the outside of said laser driver and the high frequency superimposition monitor signal.

11. A laser control method for an optical disk apparatus which drives a semiconductor laser with a high-frequency current to emit a laser beam onto an optical disk and reproduces data recorded on said optical disk, said method comprising the steps of:
15 measuring the frequency of the high-frequency current; and controlling the frequency of the high-frequency current by using the measured frequency.

20 12. A laser control method according to claim 11 further including the steps of measuring the error rate of the reproduced signal; determining the frequency of the high-frequency current so that the error rate is minimal based on the measured error rate and the measured frequency; and driving the semiconductor
25 laser with the high-frequency current of the determined

frequency.

13. A laser control method according to claim 11 further including the steps of measuring the jitter which emerges at the conversion of a reproduced analog signal into a digital signal; determining the frequency of the high-frequency current so that the jitter is minimal based on the measured jitter and the measured frequency; and driving the semiconductor laser with the high-frequency current of the determined frequency.

14. An optical disk apparatus for reproducing data recorded on an optical disk by driving a semiconductor laser with a high-frequency current to emit a laser beam onto said optical disk, said apparatus comprising: means of measuring the frequency of the high-frequency current; and means of controlling the frequency of the high-frequency current by using the measured frequency.